AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claims 1 - 3 (Canceled)

4. (Previously Presented) An infrared imaging apparatus comprising:

a dewar, having an internal volume that defines a cold space;

an IR transmissive window that seals the cold space to receive IR energy directly from an IR source;

a first lens located within the cold space to receive IR energy directly from the IR transmissive window;

an IR detector located within the cold space in operational communication with the first lens and positioned coincident to a focal plane of at least a first and second wavelength of IR energy; and

an optical stop located within the cold space in front of the first lens,

wherein the first lens has a first aspheric profile on a first side and a second aspheric profile on a second side, the first side parallel to the second side and the second side facing the detector,

wherein the second aspheric profile has a holographic optical element, and

wherein the holographic optical element color corrects a first color band of infrared energy having wavelengths of 3 to 5 micrometer and coincidently focuses at

the common focal plane the first color band and a second color band of infrared energy having wavelengths of 8 to 12 micrometer.

5. (Canceled)

6. (Previously Presented) The infrared imaging apparatus of claim 4, wherein the detector is a hyperspectral detector.

7. (Canceled)

8. (Canceled)

9. (Previously Presented) The infrared imaging apparatus of claim 4, wherein the holographic optical element coincidently focuses both the first color band of infrared energy and the second color band of infrared energy at a common focal plane.

10. (Previously Presented) The infrared imaging apparatus of claim 4, wherein one of the wavelengths of the second color band is a harmonic component of one of the wavelengths of the first color band.

11. (Previously Presented) The infrared imaging apparatus of claim 4, wherein the first lens is made of germanium.

12. (Previously Presented) The infrared imaging apparatus of claim 4, wherein the first lens is made of silicon.

13. (Previously Presented) The infrared imaging apparatus of claim 4, wherein the apparatus performs at an F-stop (F/#) of at least 1.4 with a square field of view of 90x90 degrees.

14. (Previously Presented) The infrared imaging apparatus of claim 4, wherein the detector concurrently collects radiation from multiple, adjacent spectral radiation bands.

15. (Previously Presented) The infrared imaging apparatus of claim 4, wherein the first aspheric surface has the following prescription:

radius = -0.94467;

k = 28.345216;

a = -2.13952;

b = -69.5274;

c = 2342.04;

d = -56841.9; and

first surface thickness = 0.548467.

16. (Original) The infrared imaging apparatus of claim 15, wherein the second aspheric surface has the following prescription:

radius = -0.61281;

k = 0.1399;

a = 0.033459;

b = -2.3598;

c = 10.889;

d = -36.331; and

second surface thickness = 0.462731.

17. (Original) The infrared imaging apparatus of claim 16, wherein the holographic optical element has the following prescription:

-0.0051393, -0.10212, 0.91035, -2.3946.

18. (Previously Presented) The infrared imaging apparatus of claim 4, wherein the first aspheric surface has the following prescription:

radius = -1.23508;

k = 36.049455;

a = -1.69104;

b = -98.6413;

c = 5589.83;

d = -162359; and

first surface thickness = 0.761661.

19. (Original) The infrared imaging apparatus of claim 18, wherein the second aspheric surface has the following prescription:

radius = -0.81270;

k = -0.10748;

a = 0.054475;

b = -0.72423;

c = 2.9155;

d = -7.8939; and

second surface thickness = 0.480234.

20. (Original) The infrared imaging apparatus of claim 19, wherein the holographic optical element has the following prescription:

-0.017112, -0.038991, 0.55069, -1.6405.